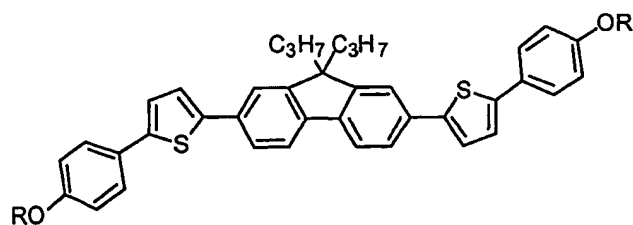


CLAIMS

1. A composition capable of emitting circularly polarised light comprising a medium including a chiral, helical liquid crystalline phase with a substantially fixed, temperature independent helical pitch, said liquid crystalline phase being comprised of calamatic liquid crystal molecules having a luminescent moiety and the composition being such that excitation of the luminescent moiety causes the medium to emit light in the bandwidth of selective reflection of the liquid crystalline phase.
2. A composition as claimed in claim 1 wherein the chiral, helical liquid crystalline phase is a chiral nematic liquid crystalline phase.
3. A composition as claimed in claim 1 wherein the chiral, helical liquid crystalline phase is a chiral, smectic C liquid crystalline phase.
4. A composition as claimed in any one of claims 1 to 3 wherein the liquid crystalline phase is a glass.
5. A composition capable of emitting circularly polarised light comprising a medium including a chiral, helical liquid crystalline phase in the form of a glass, said liquid crystalline phase being comprised of calamatic liquid crystal molecules having a luminescent moiety and the composition being such that excitation of the luminescent moiety causes the medium to emit light in the bandwidth of selective reflection of the liquid crystalline phase.
6. A composition as claimed in claim 4 or 5 wherein the glass transition temperature (T_g) of the calamatic liquid crystal molecules is greater than 50°C.
7. A composition as claimed in any one of claims 1 to 3 wherein the calamatic liquid crystal molecules are present in the form of a polymerised network.

8. A composition capable of emitting circularly polarised light comprising a medium including a chiral, helical liquid crystalline phase in the form of a polymerised network, said liquid crystalline phase being comprised of calamatic liquid crystal molecules having a luminescent moiety and the composition being such that excitation of the luminescent moiety causes the medium to emit light in the bandwidth of selective reflection of the liquid crystalline phase.
9. A composition as claimed in any one of claims 1 to 8 wherein the luminescent moiety of the calamatic liquid crystal molecules is an electroluminescent moiety.
10. A composition as claimed in any one of claims 1 to 9 wherein the emission spectrum of the moiety is tuned to the bandwidth of selective reflection of the liquid crystalline phase.
11. A composition as claimed in any one of claims 1 to 9 wherein the composition incorporates a dye capable of absorbing the emission of the luminescent moiety and re-emitting light having a wave length in the bandwidth of selective reflection.
12. A composition as claimed in any one of claims 1 to 9 wherein the composition incorporates a dye which can be excited by non-radiative transfer from the liquid crystal molecules to the dye.
13. A composition as claimed in any one of claims 1 to 12 wherein the luminescent moiety of the calamatic liquid crystalline molecules is an electroluminescent moiety.
14. A composition as claimed in any one of claims 1 to 12 wherein the luminescent moiety of the calamatic liquid crystal molecules is a photoluminescent moiety.

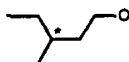
15. A composition as claimed in any one of claims 1 to 14 wherein the liquid crystal molecules are whole transporting or electron transporting.
16. A composition as claimed in any one of claims 1 to 15 wherein the calamatic liquid crystal molecules include at least one chiral centre.
17. A composition as claimed in claim 16 wherein the liquid crystalline phase comprises chiral and achiral liquid crystal molecules.
18. A composition as claimed in any one of claims 1 to 15 wherein the calamatic liquid crystal molecules are achiral and the liquid crystalline phase includes a chiral dopant.
19. A composition as claimed in any one of claims 1 to 18 wherein the calamatic liquid crystal molecules incorporate a luminescent core comprised of 4 to 6 conjugated aromatic rings, said core being attached to two aliphatic spacer groups.
20. A composition as claimed in claim 19 wherein the aliphatic spacer groups each contain a chain of 4 to 16 carbon atoms.
21. A composition as claimed in claim 19 or 20 wherein the core includes a fluorene moiety.
22. A composition as claimed in any one of claims 19 to 21 wherein the calamatic liquid crystal molecules are of the formula:



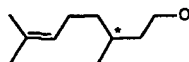
wherein each R is the same or different and represents the spacer group.

23. A composition as claimed in claim 22 wherein one or both of the R groups incorporate a chiral centre.

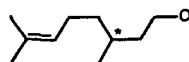
24. A composition as claimed in claim 23 wherein each R group is of the formula:



25. A composition as claimed in claim 23 wherein each R group is of the formula:



26. A composition as claimed in claim 23 wherein each R group is of the formula:



27. A light emitting device comprised of a cell having a pair of opposed sides and containing a composition as claimed in any one of claims 1 to 26, at least one of said sides being transparent to the polarised light emitted by said composition on excitation of the luminescent moiety.

28. A device as claimed in claim 27 wherein the spacing between said opposed sides is to 1 to 10 μ m.

29. A device as claimed in claim 27 or 28 which is capable of being excited by polarised and/or unpolarised light.

30. A device as claimed in any one of claims 27 to 29 capable of emitting circular polarised laser emission.

31. A device as claimed in any one of claims 27 to 30 which is an OLED.

32. The combination of a light emitting device as claimed in any one of claims 27 to 31 and a Liquid Crystal Display device, said light emitting device providing a source of polarised light for the Liquid Crystal Display device.

33. A method of producing a light emitting device as claimed in any one of claims 29 to 32 providing a cell having a pair of opposed walls at least one of which is provided on its interior surface with an alignment layer and filling the cell with a formulation which is a precursor to the composition of any one of claims 1 to 26, *which incorporates calamatic liquid crystal molecules having a luminescent moiety and which is capable of being assembled by said alignment layer(s) to a chiral, helical liquid crystalline phase, assembling said formulation into said liquid crystalline phase, and immobilising said phase so as to provide the latter with a fixed, temperature dependent helical pitch.*

34. A method as claimed in claim 33 wherein the or each alignment layer is a photoalignment layer.